

# Interaction of new fluorescent 2-quinolinone and coumarin derivatives with phospholipid monolayers and lipid vesicles

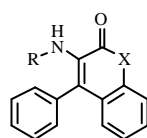
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Molecular interactions between organic molecules and phospholipids of various chain lengths have been investigated, either with monolayers at the air-interface or with bilayer vesicles (liposomes) as models of cell membranes [1]. In the present work, the interaction with biomembrane models of a fluorescent 3-amino-4-phenylquinolin-2-one **1** and a 3-(*tert*-butoxycarbonyl)amino-4-phenylcoumarin **2** (Fig. 1), previously synthesized by us [2], were studied. Interactions of both compounds with phospholipid monolayers of egg-yolk phosphatidylcholine (Egg-PC), dipalmitoyl phosphatidylcholine (DPPC) and dipalmitoyl phosphatidylglycerol (DPPG) has been studied by the Langmuir-Blodgett technique (Fig. 2).



**1**: R = H, X = NH  
**2**: R = Boc, X = O

Figure 1. Structure of compound **1** and **2**.

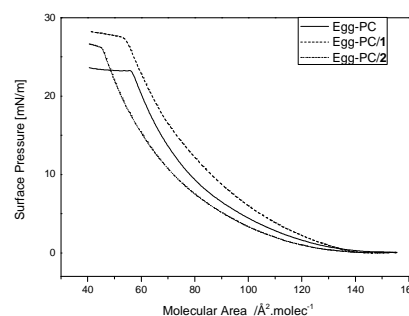


Figure 2: Surface pressure/molecular area isotherms of Egg-PC, Egg-PC/**1** and Egg-PC/**2** at the air-water interface at 22 °C.

Fluorescence emission and anisotropy measurements of **1** and **2** in lipid vesicles were performed below (gel phase) and above (liquid-crystalline phase) the lipid melting transition temperature (Table 1) in order to obtain information about compound interactions with the lipid membranes.

Table 1. Steady-state fluorescence anisotropy (*r*) values and maximum emission wavelengths ( $\lambda_{em}$ ) for compounds **1** and **2** in lipid membranes.

Lipid Membranes	T (°C)	<b>1</b>		<b>2</b>	
		$\lambda_{em}/nm$	<i>r</i>	$\lambda_{em}/nm$	<i>r</i>
Neat Egg-PC	25	398	0.088	399	0.216
Neat DPPC	25	398	0.059	400	0.164
	55	398	0.045	400	0.149
Neat DPPG	25	394, 509 <i>sh</i>	0.023	400	0.146
	55	394, 503 <i>sh</i>	0.012	398	0.119
DPPC/DPPG (1:1)	25	394, 500 <i>sh</i>	0.025	397	0.177
	55	397, 502 <i>sh</i>	0.012	396	0.157

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[1] Peetla C., Stine A., Labhasetwar V., *Molecular Pharmaceutics* **2009**, 6, 1264-1276.

[2] Queiroz M.-J.R.P., Abreu A.S., Calhella R.C., Carvalho M.S.D., Ferreira P.M.T., *Tetrahedron* **2008**, 64, 5139-5146.